User Manual

GPD 3000

gas detector

SCHÜTZ
MESSTECHNIK

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Application

The gas detector GPD 3000 is designed to search for and locate gas leaks in pipes in interior and exterior areas.

The GPD 3000 is the result of our many years of experience combined with the newest technology.

Thanks to the very simple operation of the GPD 3000, anybody may locate gas leaks without special instruction.

The size and design of the GPD 3000 light make it the ideal instrument for fitters and emergency repair teams.

The movable sensor head permits measurement in places difficult to reach.

Depending on the measurement tasks, the GPD 3000 will indicate correctly different types of gases, since it offers the possibility to adjust indication for various gases (methane, propane and hydrogen).

The following application areas can be covered with the GPD 3000

Gas type	Ignition temperature in °C	Temperature class / gas group
Acetone	535	T1 / IIA
Ethane	515	T1 / IIA
Methane	537	T1 / IIA
Propane	470	T1 / IIA
Hydrogen	560	T1 / IIC

See EN 61779 Table A.1

IMPORTANT: Observe the yearly calibration cycle.

Unit ppm, Vol.%

Unless mentioned otherwise, the following units refer to methane (CH_4). Liquefied petroleum gas usually consists of more than 90% methane.

The unit ppm refers to volume:

1 ppm = 1 cm^3 100% gas distributed in 1 m3 of surrounding air

10 ppm = 10 cm^3 100% gas distributed in 1 m3 of surrounding air

The unit Vol.%:

0,1 Vol.% = 1 dm^3 100% gas distributed in 1 m3 of surrounding air

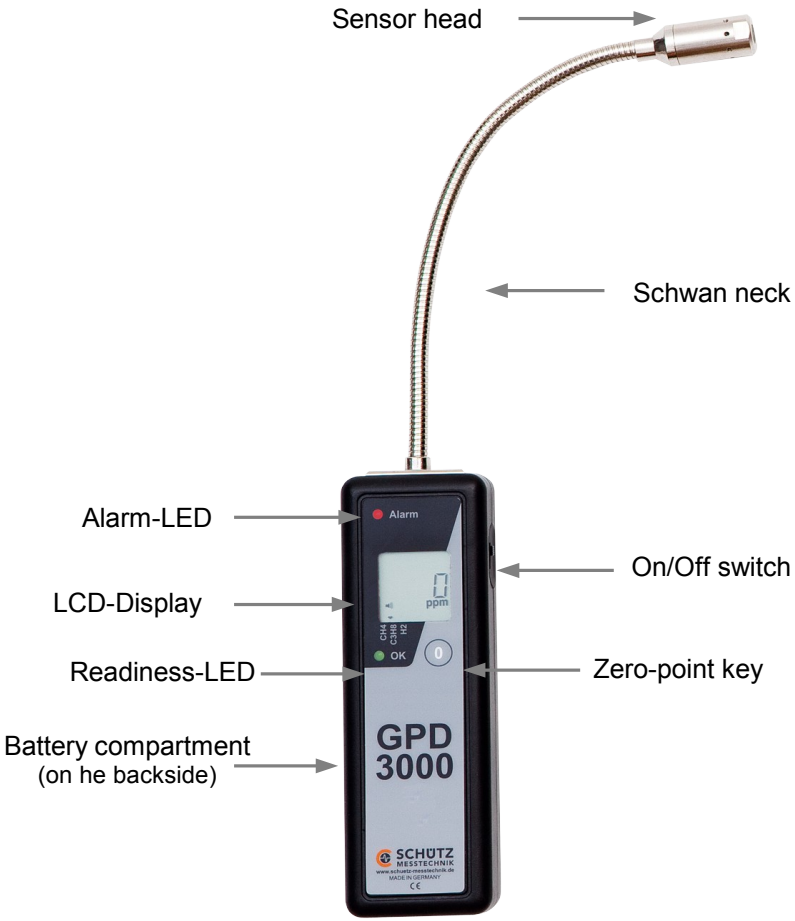
1 Vol.% = 10 dm^3 100% gas distributed in 1 m3 of surrounding air

Conversion factors:

0,01	=	10	=	0,00001	=	1/100
0,1	=	100	=	0,0001	=	1/10
1	=	1.000	=	0,001	=	1
10	=	10.000	=	0,01	=	10
100	=	100.000	=	0,1	=	100
1000	=	1.000.000	=	1	=	1000

1	=	0,0001	=	1 cm^3
10	=	0,001	=	10 cm^3
100	=	0,01	=	100 cm^3
1.000	=	0,1	=	1 dm^3
10.000	=	1	=	10 dm^3
100.000	=	10	=	100 dm^3
1.000.000	=	100	=	1 m^3

Operation elements GPD 3000



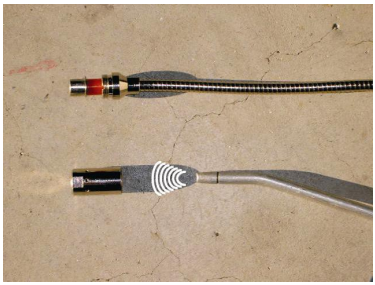
Gas sensor

The sensor head contains a sensitive gas sensor, which reacts to almost all combustible gases. Calibration of the instrument is done with methane, and it calculates the corresponding values for propane and hydrogen during the calibration process.

To ensure the instrument's high reliability, you should avoid exposing the sensor to dirt or moisture. This could cause a loss of sensitivity or even destroy the sensor.

Gas sensors which are stored over a longer period of time loose their functioning point. This is due to "pollution" (binding of oxygen) on the sensor surface and can not be avoided with putting them to work. For this reason it is advised to put the instrument to work regularly (every 2 to 3 days) and let it run for about 15 minutes. This way you don't risk having to wait when you want to use the instrument. A measurement signal indicates the end of the warm-up time, which may take up to 45 minutes.

To eliminate dust on or inside the sensor cover, unscrew it and clean it with compressed air as shown in the following illustration.



Important Information off sensor!

The sensor is highly corrosive environment to concentration of H_2S hydrogen sulphide, SO_x sulphur oxide, Cl_2 chlorine, HCL hydrogen chloride. This leading to corrosion or break of the wires or heater material.

Furthermore the sensor may not be detected with alkaline material, salt-water or water. This determine very high drift-performance of the sensor (zero point stability). Dampness sensor skills under effect of frost breaking and destroyed.

Measurement range

The GPD 3000 offers the possibility to adjust the indication for different types of gases.

However, the GPD 3000 can't be used as an analytical instrument, since it detects almost all combustible gases in the same manner.

Gas type	Measurement range	Comment
Methane	0 ppm up to 2,5 Vol%	2,2Vol% correspond to 50% LEL
Propane	0 ppm up to 1,0 Vol%	50% LEL
Hydrogen	0 ppm up to 2,0 Vol%	50% LEL

This option allows adjusting your indication for different kinds of gases. If you are working on natural gas installations, it is recommended to measure using the methane measurement range. To work on an installation fed with propane or hydrogen, you can select the corresponding measurement range.

As the concentration increases, the frequency of the acoustic signal will also increase, until reaching a constant sound with the maximum range.

When measuring, please take into account that methane and oxygen are lighter than air and will rise. For these gases, measure above of the pipe or the supposed leak.

Important notice for propane!

Since propane is heavier than air, when searching for leaks also begin measuring the concentration on the ground, and then continue the search underneath the pipe.

Turning on the GPD 3000

As soon as you turn on the GPD 3000 with the On/Off switch, the warm-up time starts. The sensor requires this time to reach the working temperature.

During the warm-up time, certain functions of the instrument are checked. The display will be showing the available sensor (for the ppm measurement range) and the LED (green and red) light-up alternating. Afterwards the configuration for gas type, language and battery state are shown.

The warm-up time will be done when the readiness LED lights-up. In the ready state a short signal is heard every 20 seconds, indicating that the instrument is ready to measure. Now you can start measuring.

Zero point

The zero-point is set automatically after the warm-up time, as soon as the GPD 3000 is ready. This means the GPD 3000 has set the available surrounding air as zero point.

With the instrument turned on, you may set the zero manually striking the zero point key, so the present measured value is determined as zero point.

When the GPD 3000 measures a value below the set zero point, it will indicate this by means of the blinking readiness LED. Now the GPD 3000 will very slowly counteract this tendency. However, you can also set the zero point manually by striking the zero point key.

The range, which the GPD 3000 will accept as zero point, is limited; this means, for instance, that you can't „suppress" a concentration of 1Vol% by striking the zero point key.

Turn light on/off

Short function
When the *Light* function is activated in the menu, you can turn the light on and off by striking the zero point key (until a signal sound is heard and the display shows LIGHT).
This function will not be available when it is not activated in the menu (YES).

Energy supply

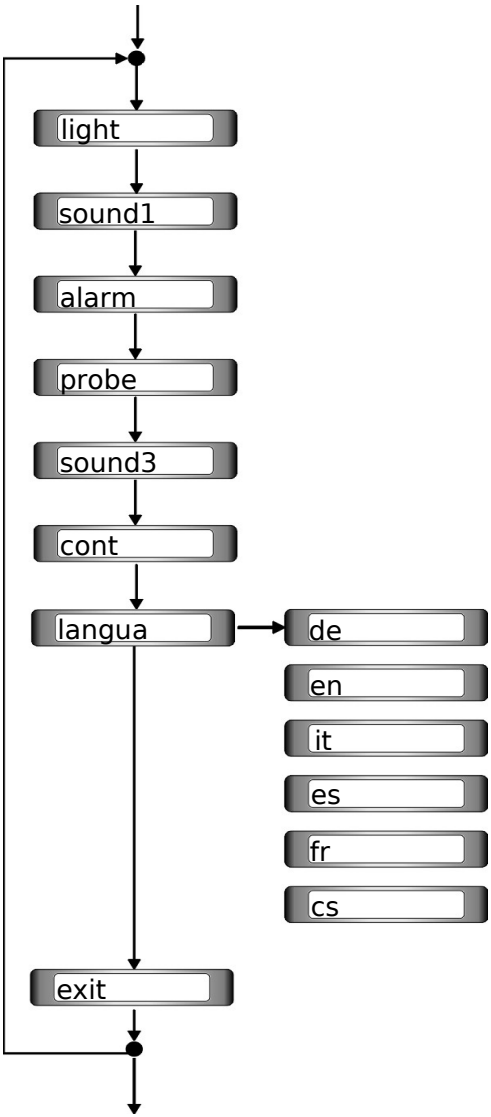
The GPD 3000 uses to regular AA batteries. You can use batteries or rechargeable accumulators. To change the batteries or accumulators, open the battery compartment with the supplied Allen wrench.

Working time is up to 10 hours.

When the Low-Batt message appears in the display, it indicates that the batteries are almost empty. You should be changing them.

Please do not use low quality batteries or accumulators, since the operating time will be considerably shorter.

Menu functions



Open menu

Hold down the zero point key until you hear a pulsating sound. After releasing the key, the display will show the first point of the menu.

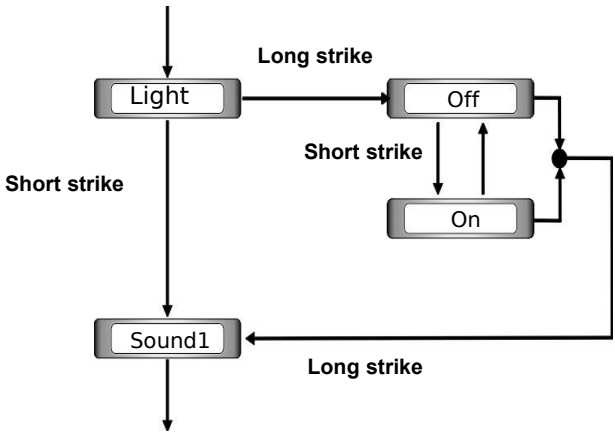
A short touch of the key will open the next point, in the order shown above.

To edit a menu point, hold down the zero key for more than 3 seconds (until hearing a signal sound). After releasing the zero key you can successively open the available functions by briefly striking the key. Confirm the adjustment striking the key again for a longer time (over 3 seconds). When releasing the zero key you are automatically in the next menu point.

Activate the light

Setting „Off“: light not active

Setting „On“: light active

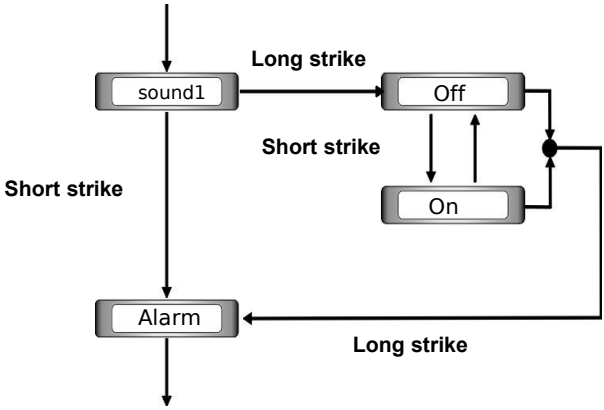


To save energy, the light will disconnect after approx. 2 minutes.

Turn alarm sound on/off *(Tone1)*

Setting „Off“: no alarm sound

Setting „On“: alarm sound activated



When reaching the adjusted alarm limit, the alarm sound is emitted with increasing frequency, depending on the gas concentration.

Adjust alarm level

The alarm level may be adjusted freely within the measurement range. The flashing digit can be adjusted to any number between zero and 9. After approx. 5 seconds the next digit will flash for adjustment.

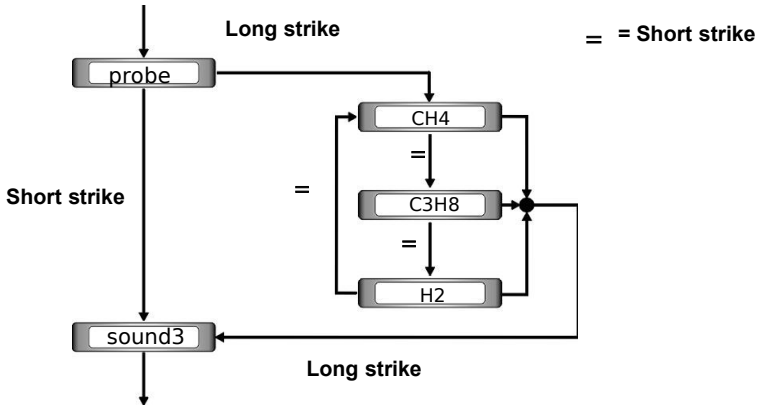
To save the adjusted value, strike the zero key until a sound confirms the saving process.

Adjust contrast

The contrast of the display may by adjusted in 25 points and the saved. With each short stroke of the key, the menu increases the value in one point, and when reaching the final value starts counting again from zero.

Adjust gas type

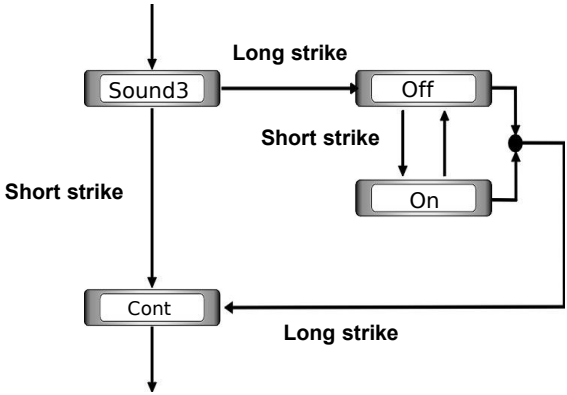
In this menu, you may adapt the indication of the instrument for a certain kind of gas.



Turn readiness sound on/off *(Tone3)*

Setting „Off“: no readiness sound

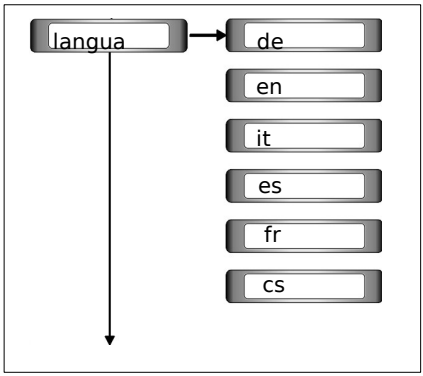
Setting „On“: readiness sound is activated



Adjust language

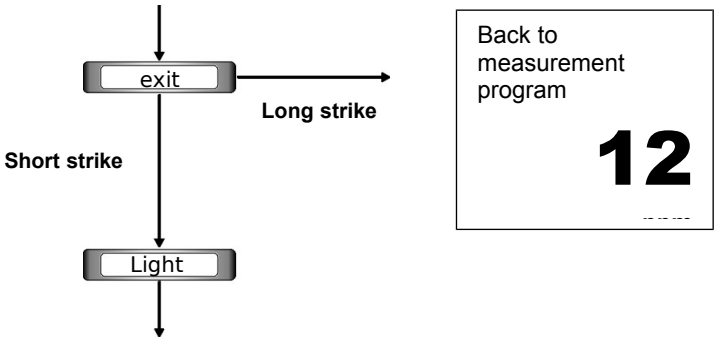
You can choose between 6 languages. When the display shows „LANGUA“, you can reach into the language menu via a long keystroke. Now the different languages are shown in the display.

You can choose between them via short keystrokes. To set a selected language use a long keystroke. After that happened the device turns back into the main menu.



End menu

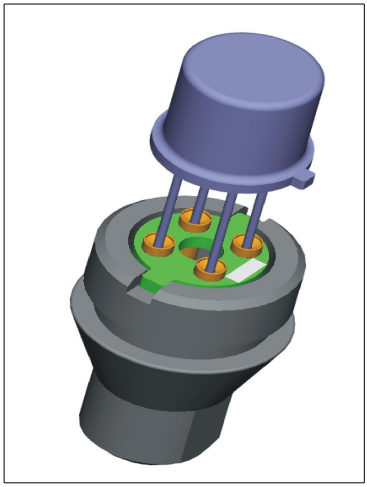
Long strike: Finalises the function and returns to measurement operation



Error message

The GPD 3000 has a sensor control from software version 3.02 and above. If an error occurs, the display shows “F 30” and the red LED is on. In that case the device is not ready for operation and can be switched off. Please check if the sensor is installed in the correct way.

The markers of the sensor (“nose”) and the circuit board (white bar) have to be at the same place. Please pay attention that the head of the sensor does not contact the circuit board to prevent a short circuit! So don't put the sensor too deep into the circuit board.

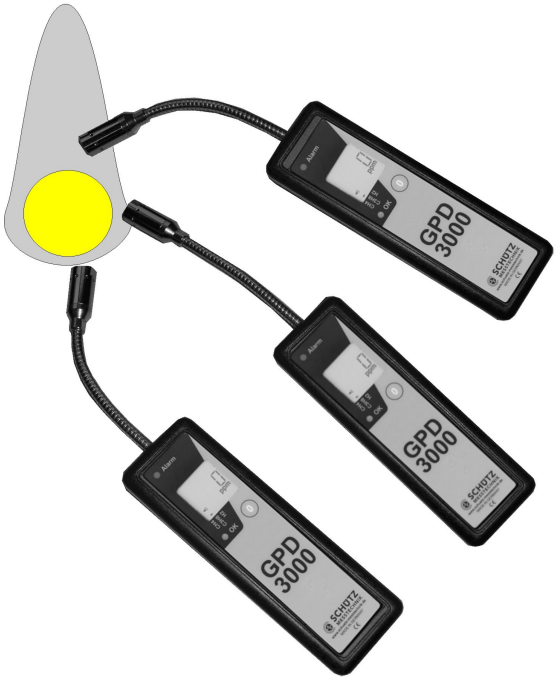


If the error still occurs the device needs a maintenance by Schütz GmbH Messtechnik or one of the official service partners.

Practical hints

Surveying natural gas mains

Hereafter is shown how to inspect the pipes carrying natural gas. Since methane is one of the main components of natural gas, and methane is lighter than air, the inspection should be done above the pipe.



Surveying propane mains

As opposed to methane, propane is heavier than air. For this reason, the measurement should be done under the pipe, as shown in the illustration, to obtain the best measurement results.

Declaration of conformity

Supplier:	Schütz GmbH Messtechnik
Address:	Im Dornschlag 6 77933 Lahr Germany
Instrument type:	GPD 3000
Applicable Regulation:	EU – Guideline for electromagnetic compatibility (2004/108/EG)
Applied Regulations:	DIN EN 61000-6-3 Interfering transmissions in residential, commercial, small business areas
	DIN EN 61000-6-2 Resistance against interference in industrial areas

Any changes made to the instrument without prior permission of the manufacturer makes this declaration null and void.

Lahr, 31.07.2009

Schütz GmbH Mestechnik

Inspection sheet

For testing the function and display accuracy of GPD 3000, there is an inspection sheet available.

Terms of use

Please observe the operation manual!

For correct use of this instrument, it is important to read the operating instructions. The instrument may only be used for the described purposes.

As far as rules, regulations, laws or other legal provisions concerning the use of this instrument are mentioned, they are based on German law. This instrument complies with the European guidelines for electromagnetic compatibility (EMC).

Maintenance

Maintenance and repair work in this instrument may only be done by the manufacturer or his authorised technicians. Principally only SCHÜTZ – MESSTECHNIK spare parts should be used.

Warranty

The instrument has a 24-month warranty from the date of purchase. **In case of damaged screw fasteners, the warranty is voided.**

The warranty does not include wear and tear materials (sensors and battery)**.**

Liability for function and damages

The liability passes over to the owner or operator of the instrument in all cases in where maintenance or servicing is performed by unauthorized personnel, or in case the instrument is not used for the purpose, for which it was designed.

The sensor head should not come in touch with moisture or dirt, since this would damage it. In this case, the warranty shall be void. The instrument may not be used to evaluate a gas concentration, as its sole function is to locate gas accumulations.

Accessories

The following items can be ordered as accessories for the GPD 3000

Reference	Designation
232.010	GasPen sensor protection cap Separator for sensor head
200.233	Battery AA (R6) battery 1,5V
201.186	Extraction valve Extraction valve with test cap for GasPen
200.609	Aluminium can with calibration gas 1 Litre 1 Vol% CH4
200.610	Aluminium can with calibration gas 1 Litre 12 bar 2,2 Vol% CH4

Technical data

Dimensions:	approx. 25 x 45 x 140mm
Swan neck:	approx.180 mm
Weight:	approx. 200g (including batteries)
Ex - marking:	see declaration of conformity
Energy supply:	2x batteries type Camelion Alcaline PLUS AA (supplied)
Measurement range:	0 ppm to 2,5 Vol. %

Tolerance:	100ppm	$^{+250ppm}_{-50ppm}$	with 20-50%rF
	0,1Vol%	$^{+0,5Vol\%}_{-250ppm}$	with 20-50%rF
	1,0Vol%	$^{+0,5Vol\%}_{-0,2Vol\%}$	with 20-50%rF
	2,2Vol%	$^{+0,2Vol\%}_{-0,3Vol\%}$	with 20-50%rF

Resolution:	starting at 1 ppm
Operation time:	up to 10 hours. *The operation time will be significantly reduced by the use of bad quality batteries or rechargeable batteries.*
Operating temp.:	0°C to +40°C
Stocking temp.:	-10°C to +50°C

Manufacturer: **Schütz GmbH Messtechnik**

Delivery: GPD 3000 , plastic case, 2 batteries AA, operation manual with certificate

Test-Report

TEST PLAN for GPD 3000

(Test Gas Methane, humidified with 20 to 50% rF)

Serial Number:

1.	G465 Cycle	Condition of Device	Desired Value	Measured Value
1.1	Week	Optical device condition	ok	
1.2	Week	LCD	ok	
1.3	Week	LED	ok	
1.4	Week	Sound	ok	
1.5	Week	Full battery	ok	
1.6	Week	Swan neck	ok	
1.7	Week	Sensor head	ok	

2.		Checks	Desired Value	Measured Value
2.1	Week	Surrounding air	0 ppm	
2.5	Week	Test gas 1 Vol.% CH4	0.8...1.2 Vol.%	
2.6	x	Test gas 2.2 Vol.% CH4	2.0...2.4 Vol.%	

3.		Documentation
3.1		Date
3.2		Signature
	x	If necessary, also check 2.2 Vol.%